

**Request to Archive
With The National Centers for Environmental Information
For CSU SSM/I-SSMIS Fundamental Climate Data Record (FCDR)
Provided by Colorado State University**

2012-11-30

This information will be used by NCEI to conduct an appraisal and make a decision on the request.

1. Who is the primary point of contact for this request?

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2. Name the organization or group responsible for creating the dataset.

COLOSTATE/ATMOS > Department of Atmospheric Sciences, Colorado State University

3. Provide an overview summarizing the scope of data you want to archive. Describe the outputs, data variables, including their measurement resolution and coverage.

The data to be archived consists of two datasets. The first of these is a collection of the raw satellite data, or temperature data record (TDR) data, which has been reformatted into NetCDF4 and broken into single orbit granules. These files are referred to as BASE files and are used as input for the subsequent processing of the final intercalibrated FCDR files. Other additions to the BASE files include spacecraft position/velocity calculated from two-line element ephemeris data, the elimination of duplicate data, and some data quality information. The other dataset is the final Fundamental Climate Data Record (FCDR) of brightness temperature data from the SSM/I and SSMIS sensors. The processing of the FCDR files from the BASE files includes a number of aspects including rigorous quality control of the original TDR data, updated geolocation information, corrections for known issues/problems, and adjustments for residual intercalibration differences between sensors.

Both the BASE and FCDR datasets encompass data from a total of nine satellites including the SSM/I sensors on board DMSP F08, F10, F11, F13, F14, and F15 as well as the SSMIS sensors on board DMSP F16, F17, and F08. The data record encompasses the period from July 1987 through December 2012. The output parameters include the observed brightness temperatures for each of the seven SSM/I channels and 24 SSMIS channels at the original sensor resolution along with latitude/longitude for each pixel, time, quality flags, and view angle information. The spatial and temporal resolution of both the BASE and FCDR files correspond to the resolution of the raw satellite observations, which provide global coverage and a total of ~15 orbits/day and a swath width of ~1400 km resulting in nearly global daily coverage. The resolution of the output data is a function of the sensor/channel and varies from ~50 km for the lowest frequency channels to ~15km for the high-frequency channels.

4. What is the time period covered by the dataset? (YYYY-MM-DD, YYYY-MM or YYYY)

From 1987-07-09 to 2012-12-31

5. Edition or version number(s) of the dataset:

V01

6. Describe the level to which the data are processed. For example, are these unprocessed raw observations, derived parameters, quality controlled or inter-calibrated data, etc.?

As specified above this consists of two datasets. The BASE files are the raw unprocessed antenna temperature data which have been divided into single-orbit granules. The purpose of these data is to preserve the information in the original TDR data files in an easy to access/process format for subsequent processing. The other dataset is the final FCDDR data which have been quality controlled, have numerous corrections applied, have updated geolocation, and have intercalibration adjustments applied between sensors.

7. Approximate date when the dataset was or will be released to the public:

2013-01

8. Who are the expected users of the archived data? How will the archived data be used?

Algorithm developers working to produce long-term climate data records of geophysical data products including precipitation, total precipitable water, ocean surface winds, sea ice edge and concentration, land emissivities, soil moisture etc.

9. Has the dataset undergone user evaluation and/or an independent review process? Did NCEI participate in design reviews?

A beta version of the data was released to interested algorithm developers for evaluation. Feedback has subsequently been used to address issues and develop further corrections/improvements.

10. Describe the dataset's relationship to other archived datasets, such as earlier versions or related source data. If this is a new version, how does it improve upon the previous version(s)?

Both the BASE files and FCDDR files have the same coverage, resolution, etc. as the archived SSM/I and SSMIS TDR files, but have significant subsequent processing applied to make them suitable for use in the development of geophysical or thematic Climate Data Records.

11. List the input datasets and ancillary information used to produce the data.

The input data include the temperature data record (TDR) data and two-line element ephemeris files.

12. List web pages and other links that provide information on the data.

It is compliant with CF-1.6

13. List the kinds of documents, metadata and code that are available for archiving. For example, data format specifications, user guides, algorithm documentation, metadata compliant with a standard such as ISO 19115, source code, platform/instrument metadata, data/process flow diagrams, etc.

1. ATBD-FCDDR-SSMI-v1.pdf -> Algorithm Theoretical Basis Document (ATBD) for the SSM/I sensors (F08, F10, F11, F13, F14, and F15).
2. ATBD-FCDDR-SSMIS-v1.pdf -> Algorithm Theoretical Basis Document (ATBD) for the SSMIS sensors (F16, F17, and F18).
3. TGARS-IntercalibrationPaper_2012.pdf -> Journal publication in the IEEE Transactions on Geoscience and Remote Sensing detailing the intercalibration of the SSM/I sensors.
4. TGARS-GeolocationPaper_2012.pdf -> Journal publication in the IEEE Transactions on Geoscience and Remote Sensing detailing the geolocation of the SSM/I sensors.
5. csu_fcdr_ssmi_qualitycontrol_report.pdf -> CSU technical report detailing the quality control of the data.
6. csu_fcdr_ssmi_intercalibration_tech_report.pdf -> CSU technical report detailing the inter calibration of the data.

7. csu_fcdr_ssmi_geolocation_tech_report.pdf -> CSU technical report detailing the geolocation of the data.
8. csu_fcdr_geolocation_satellite_attitude_tech_report.pdf -> CSU technical report describing exactly how the geolocation of the data is done.
9. csu_fcdr_ssmis_ta2tb_tech_report.pdf -> CSU technical report detailing the process of going from the raw antenna temperatures to brightness temperatures for the SSMIS sensors.
10. csu_fcdr_radcal_correction_tech_report.pdf -> CSU technical report detailing the correction applied to the F!5 data after August of 2006 to correct for contamination by the radar calibration (i.e. RADCAL) beacons.

14. Indicate the data file format(s).

1. netCDF-4

15. Are the data files compressed?

zlib

16. Provide details on how the files are named and how they are organized (e.g., file_name_pattern_YYYYMM.tar in monthly aggregations).

BASE files: SSMI_TDRBASE_V01R01_F13_D20090101_S0141_E0322_R71104.nc -> BASE file name format includes sensor, file type, version and revision numbers, satellite designator, start date, start time, end time, orbit number, and file format (i.e. nc).

FCDR files: CSU_SSMI_FCDR_V01R01_F13_D20090101_S0141_E0322_R71104.nc -> FCDR file name format includes organization (i.e. CSU), sensor, file type, version and revision numbers, satellite designator, start date, start time, end time, orbit number, and file format.

17. Explain how to access sample data files and/or a file listing for previewing. If it is not available now, when will it be available?

ftp://rain.atmos.colostate.edu/FCDR/sample_data

18. What is the total data volume to be submitted?

Historic Data: all historic data or data submitted as a completed collection.

Total Data Volume: 6.4TB

Number of Data Files: 780000

Continuous Data: data volume rate for a continuous data production.

Total Data Volume Rate: 2GB per Day

Data File Frequency: 30 per Day

Data Production Start: 2012-12-01

19. Are later updates, revisions or replacement files anticipated? If so, explain the conditions for submitting these additional data to the archive.

Updates are anticipated to the SSMIS data files as new data becomes available. Initially interim files or ICDR files will be produced. Once the data has been fully checked updates to the FCDR files will be provided approximately every six months. In addition, significant changes to the processing software will require reprocessing of the entire data archive, which will be done as needed (perhaps every few years).

20. Describe the server that will connect to the ingest server at NCEI for submitting the data.

Physical Location: Fort Collins, CO

System Name: sdsrain.atmos.colostate.edu

System Owner: COLOSTATE/ATMOS > Department of Atmospheric Sciences,
Colorado State University

Additional Information: Linux workstation with data stored on RAID disk array

21. What are the possible methods for submitting the data to NCEI? Select all that apply.

1. FTP PULL
2. FTP PUSH
3. Physical Media Delivery

22. Identify how you would like NCEI to distribute the data. Web access support depends on the resources available for the dataset.

1. Unknown
2. User interface to order and stage data for download

23. Will there be any distribution, usage, or other restrictions that apply to the data in the archive?

No known constraints apply to the data.

24. Discuss the rationale for archiving the dataset and the anticipated benefits. Mention any risks associated with not archiving the dataset at NCEI.

The rationale for archive the data is to ensure the availability of a long-term, high-quality, intercalibrated brightness temperature (Tb) dataset, of FCDR, for use by algorithm developers to produce climate data records (CDRs). The quality of the CDRs for climate applications depends on the quality of the input Tb data and it is important that this data be publicly available and fully documented to make it available to a wide array of potential users as well as to archive it to ensure its availability for extended climate records and future applications.

25. Are the data archived at another facility or are there plans to do so? Please explain.

No

26. Is there an existing agreement or requirement driving this request to archive? Have you already contacted someone at NCEI?

The above specified project was funded by NOAA through its Climate Data Records program. There was an agreement with NOAA to deliver the dataset to NCDC at the end of the original 3-year funded project.

27. Do you have a data management plan for your data?

No

28. Have funds been allocated to archive the data at NCEI?

No

29. Identify the affiliated research project, its sponsor, and any project/grant ID as applicable.

A Fundamental Climate Data Record of SSM/I, SSMIS and Future Microwave Imagers

30. Is there a desired deadline for NCEI to archive and provide access to the data?

Archive by: 2013-01-31

Accessible by:

31. Add any other pertinent information for this request.

None

